

Priority Panel Review

**Flat Creek/IMM Site
Superior, Montana**

February , 2012



Site Description

◆ Source history

- ◆ The Iron Mountain Mine (IMM) was the primary contaminant source.
- ◆ IMM operated from 1909 to 1930 and again from 1947 to 1953, producing silver, gold, lead, copper, and zinc ores.
- ◆ Tailings/mine waste contain elevated concentrations of metals.
- ◆ Mine structures and waste piles remain today.

Site Description (cont.)

◆ History of Contaminant Transport

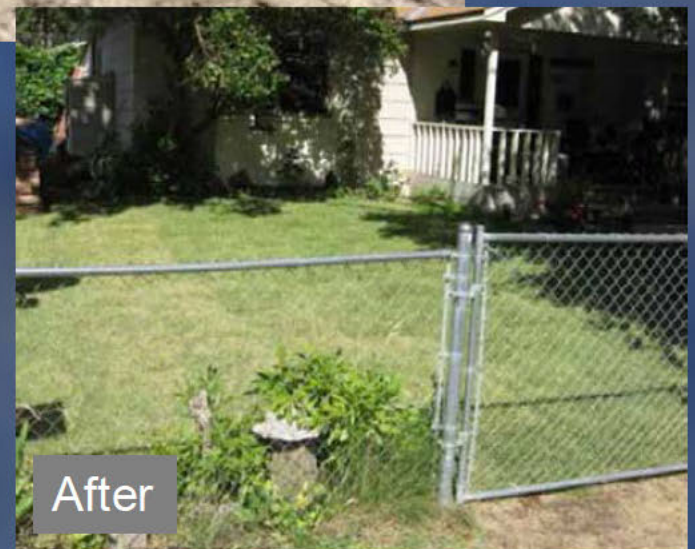
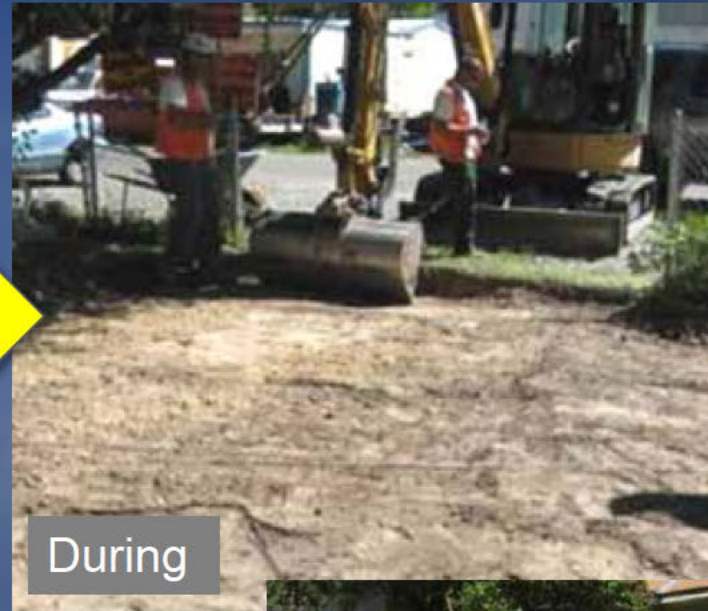
- ◆ Tailings were disposed along Flat Creek using gravity drainage and are widespread along the creek.
- ◆ Flood events have spread the tailings down to the Clark Fork River.
- ◆ Mine waste has been imported by local government and individuals as fill material in yards, roadways, and other locations (e.g., the school track).

Background and Overview (cont.)

◆ Regulatory Involvement

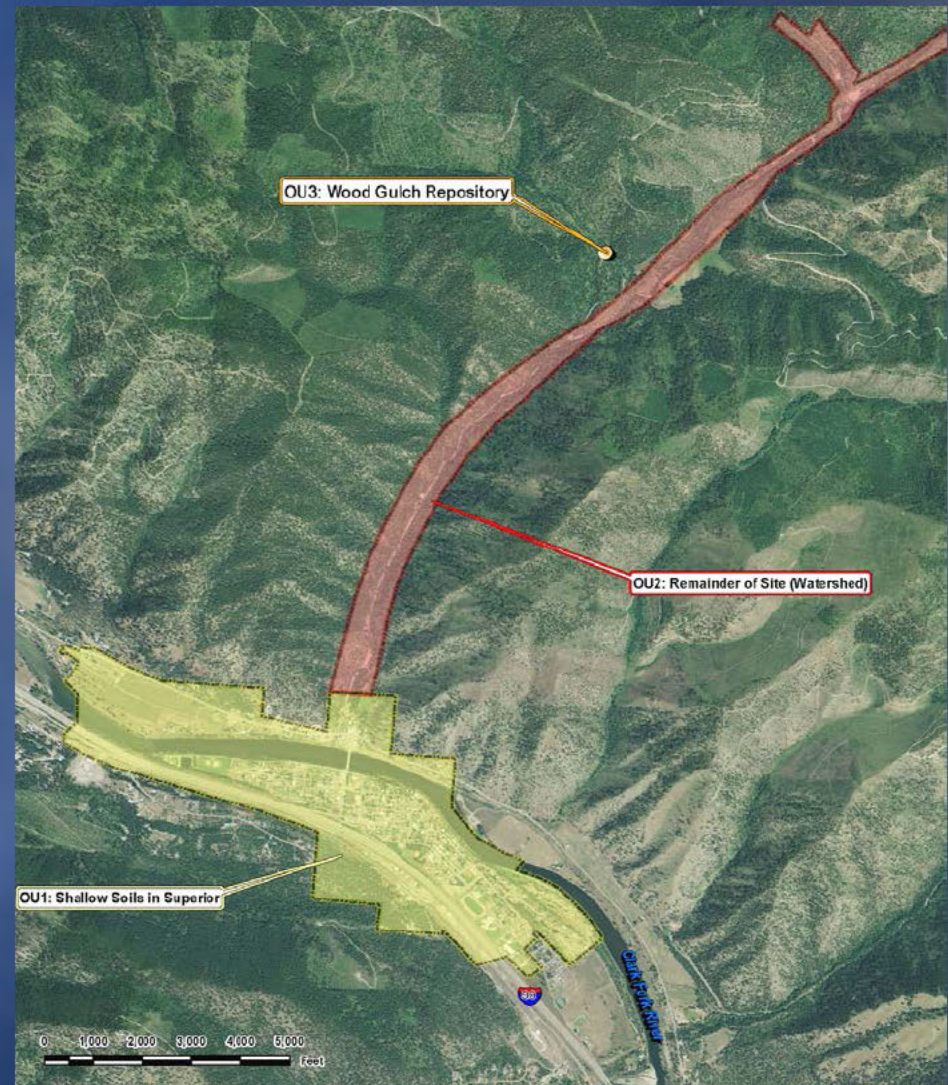
- ◆ 2001. PA/SI.
- ◆ 2002. Additional sampling and TCRA.
- ◆ 2007. PA updated in preparation for NPL.
- ◆ 2009. NPL listing and start of RI.
- ◆ 2010. 2nd RI field season and 2nd TCRA.
- ◆ 2011. RI/FS reports, proposed plan, and construction of repository.
- ◆ 2012. ROD.

Typical TCRA Removal/Restoration



Site Components

- ◆ **OU1: Town of Superior**
 - ◆ Shallow soils
- ◆ **OU2: Site-wide OU**
 - ◆ Includes GW, SW, and eco risk
- ◆ **OU3: Wood Gulch mine waste repository**



Locations of OUs at Site

Response Action Summary

Remediation addresses discrete activities in two main areas of OU1:

1. Residential and potential residential yards. Excavation, disposal, backfill, and restoration of specific areas at these properties known to have unacceptable concentrations of COCs.
2. Airport repository. Excavation, disposal, backfill, and restoration of stockpiled and previously disposed contaminated soils (15,255 cy) from the Airport repository.

All excavated materials will be placed in the Wood Gulch repository.

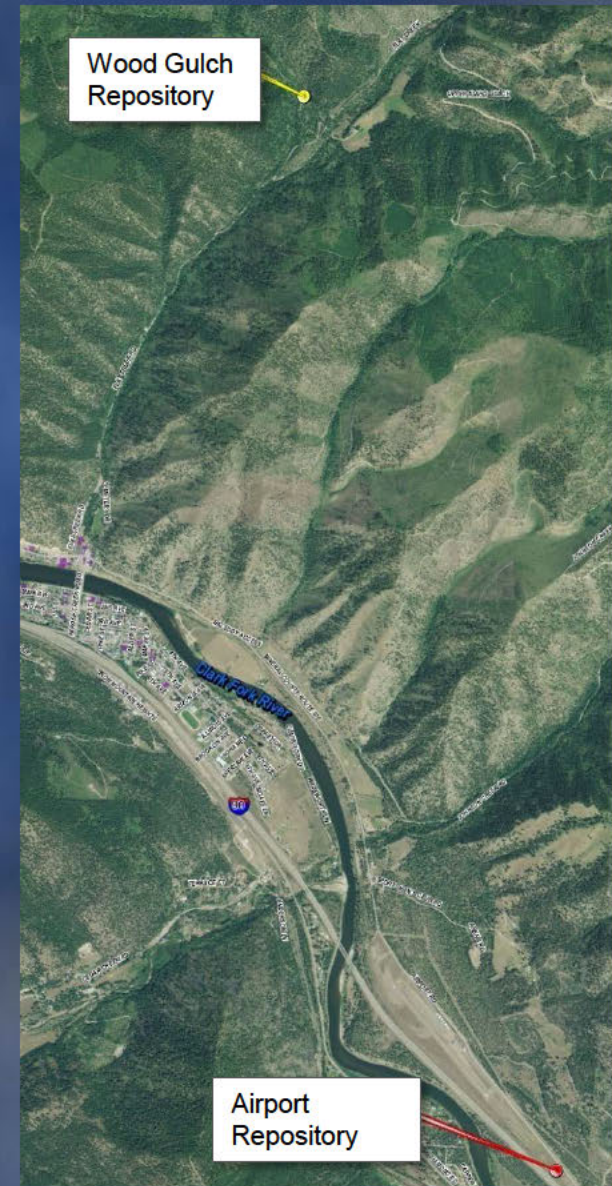
Response Action Cost

- ◆ **Cost of proposed action.** \$1,496,000 (from draft ROD)
- ◆ **Breakout by fiscal year.** All in FY12.
- ◆ **Timeframe.** Assumes 1 year to complete depending on RA Start date and weather.

Note: The remedial design and associated construction cost estimates have not been started. Design costs are expected to be minimal if EPA's removal group performs the work.

Response Action Summary (cont.)

Soil stockpiled at the airport repository will be transported to the Wood Gulch joint mine waste repository (OU3)

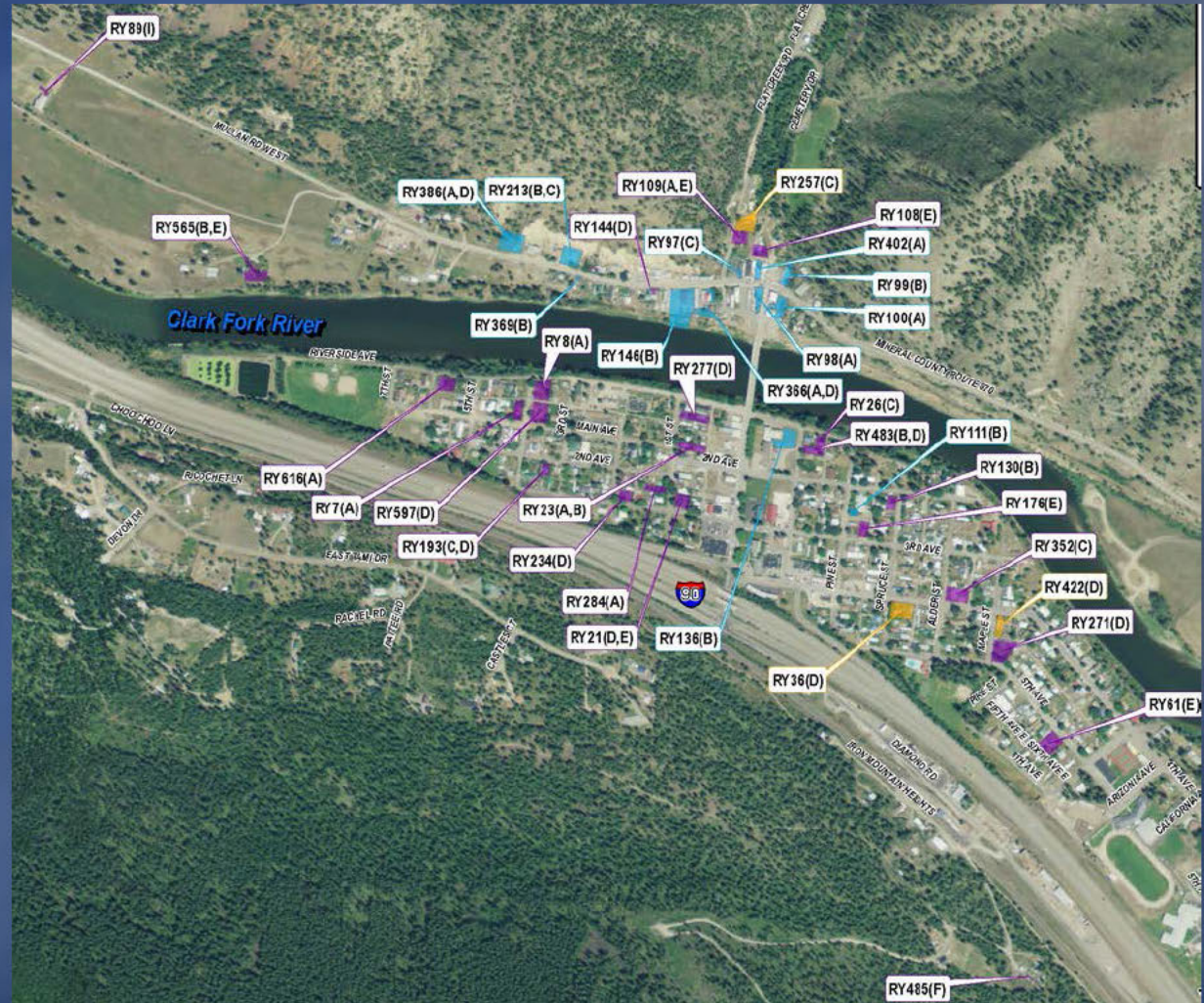


Criteria #1. Risks to Human Population Exposed

- ◆ **COCs and media.** Antimony, arsenic, and lead in soils.
- ◆ **Exposed population.** Children (239 of school-age) and adults who reside in Superior.
- ◆ **Exposure routes.** Primarily incidental ingestion of soils during work, play, or other activities.
- ◆ **Current risk and future risk.** Unacceptable risk in yards where COCs exceed RGs. Temporarily stockpiled soils at airport (2010 TCRA) are a future risk.

Criteria #1. Risks to Human Population Exposed (continued)

- ◆ Number of properties to be remediated
 - ◆ 39 individual properties
 - ◆ Airport soil stockpile and repository



Criteria #1. Risks to Human Population Exposed (continued)

◆ Likelihood of Exposure

- ◆ Contaminated areas are easily accessible to residents, neighbors, and visitors.**
- ◆ Contamination is at or near surface, and vegetative cover can be sparse or non-existent .**
- ◆ Lower income residents often cannot pay for yard upkeep, which results in a direct exposure pathway.**
- ◆ Potential receptors are plentiful and include sensitive individuals, such as children who are likely to be exposed to contaminated soils in areas where they play.**

Criteria #2. Site/Contaminant Stability

- ◆ **Means/likelihood to impact other areas/media.** COCs are exposed to migration via wind or surface water runoff or transport on car tires.
- ◆ **Engineered containment.** Original Airport repository is an engineered structure, but it now also contains a soil stockpile.
- ◆ **Physical limitations to migration.** None.
- ◆ **ICs.** Only the Airport repository has controls (fence).

Criteria #3. Contaminant Characteristics

- ◆ Range of concentrations and remedial goals for COCs at properties targeted for remediation
 - ◆ Antimony. 1 to 3,460 ppm (84 ppm ave.). RG = 130 ppm.
 - ◆ Arsenic. 5 to 2,660 ppm (117 ppm ave.) RG = 100 ppm
 - ◆ Lead. 16 to 13,900 ppm (707 ave.). RG = 400 ppm.
- ◆ Toxicity and significance of concentrations
 - ◆ Lead has negative effects on neural development of children.
 - ◆ Arsenic is a known carcinogen (liver, bladder, kidneys, prostate, and lungs).
 - ◆ COCs do not degrade significantly with time.

Criteria #3. Contaminant Characteristics (continued)

- ◆ **Contamination is well-defined**
 - ◆ Over 95% of properties (588) screened.
 - ◆ 7,209 XRF samples and 988 CLP samples
 - ◆ 11% of properties exceed RGs
- ◆ **Highest contamination already removed**
 - ◆ 2010 and 2011 TCRAs
- ◆ **Remedial action is targeted and achievable**
 - ◆ Will easily and efficiently reduce human health risk to acceptable levels
 - ◆ Allows for less reliance on ICs and moves site toward construction completion

Criteria #4. Threat to the Environment

- ◆ OU1 created to focus only on shallow soils in Superior
- ◆ Eco-risk will be covered under OU2 RI
 - ◆ Unlikely that surface water or groundwater impacts will be found at OU1.
 - ◆ No known threats at this time to ecological receptors.
- ◆ OU1 RA will reduce eco-risks
 - ◆ Removal of contaminated soils will eliminate potential for COCs in those soils to migrate to eco receptors via wind erosion, surface water runoff, and tracking on vehicle tires.

Criteria #5. Programmatic Considerations

◆ Community acceptance

- ◆ Limited oral comment at public hearing and no public comment during the 30-day comment period.
- ◆ Local government officials have no serious concerns with the remedy.

◆ State Acceptance

- ◆ State of Montana is in agreement, with 2 requirements:
 - Removal of yards with COCs >RGs in all three depth intervals
 - Use of sampling areas for the exposure unit (rather than property-wide)

Criteria #5. Programmatic Considerations (continued)

◆ Environmental justice

- ◆ Children from low-income homes may have greater exposure, due to lack of vegetative cover and more time spent outside in contact with the soils.

◆ Redevelopment

- ◆ Airport repository is no longer viable, and the city will not allow it to be modified to serve in that capacity, as they believe it has hampered ability to obtain grants to update or expand airport.
- ◆ Community is anxious to have contamination from yards removed, believing it will remove a stigma that may negatively impact home sales.

◆ Remedial action completion

- ◆ The remedy is simple and easy to implement
- ◆ Construction will be complete in one field season.